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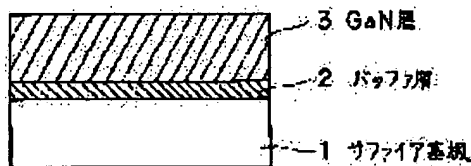
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## (54) CRYSTAL GROWTH METHOD OF GALLIUM NITRIDE COMPOUND SEMICONDUCTOR AND MANUFACTURE OF SEMICONDUCTOR LASER

### (57)Abstract:

PROBLEM TO BE SOLVED: To improve the flatness and the orientational property of crystallization, and to decrease the defect of lamination by a method wherein the surface of a crystal substrate is formed in such a manner that the tilt angle of the plane direction, which is equivalent to specific plane direction, is set within a prescribed value.

SOLUTION: A GaN buffer layer 2 is crystal-grown on a sapphire substrate 1 having (1, -1, 0, 1) faces as the surface, and a GaN layer 3 is crystal-grown thereon. The crystal growth speed in the direction vertical to the (1, -1, 0, 1) faces is slow, and the atomic migration on the above-mentioned plane is intensified. As a result, a hexagonal gallium nitride compound semiconductor, which is smooth on the surface in the direction in parallel with the substrate surface and having uniform C-axis orientational direction, is formed. The same effect can be obtained even when the orientation of substrate is inclined by 5 degrees or less from the (1, -1, 0, 1) face orientation.



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